

MULTIFUNCTIONAL APPARATUS, INFORMATION PROCESSING
APPARATUS, DATA PROCESSING METHOD, AND COMPUTER
PROGRAM PRODUCT EXECUTED BY THE MULTIFUNCTIONAL
APPARATUS OR THE INFORMATION PROCESSING APPARATUS

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BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to: a
multifunctional apparatus and an information
10 processing apparatus which are capable of
communicating with an external apparatus via a
predetermined communication medium; a data
processing method; and a computer program product
executable by the multifunctional apparatus or the
15 information processing apparatus.

Related Background Art

Conventionally, in the case where a
multifunctional apparatus having a plurality of
functions of a copier, a scanner, a printer, a
20 facsimile, and the like transmits data to a
specified destination by performing facsimile
transmission or the like, address information used
to specify the destination is independently
managed by each of an information processing
25 apparatus and the multifunctional apparatus.

With this conventional technique, however, in
the case where data transmission such as facsimile

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computer program executable by the multifunctional apparatus or the information processing apparatus.

Also, a secondary object of the present invention is to provide a multifunctional apparatus, an information processing apparatus, and a data processing method, with which it is possible to freely construct a data processing environment having superior convenience in which if an external apparatus receives a request for communication information from the multifunctional apparatus, the communication information is converted (translated) into communication information that is usable at the multifunctional apparatus and the converted communication information is transferred to the multifunctional apparatus that has requested the information, thereby making it possible for the multifunctional apparatus to use the communication information without difficulty even if the communication information is managed by the external apparatus in a unique data format. The secondary object of the present invention is also to provide a computer program executable by the multifunctional apparatus or the information processing apparatus.

To realize the above objects, the present invention has the following construction. That is, a multifunctional apparatus according to the

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present invention is comprised of: a management means for managing ID information determined for each user and address location information associated with the ID information; an input means
5 with which the user inputs the ID information; and an obtaining means for specifying the address location information managed by the management means using the inputted ID information, communicating with an external apparatus via a
10 predetermined communication medium on the basis of the address location information, and obtaining communication information residing at an address location specified by the address location information.

15 Other features and advantage of the present invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts
20 throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating the construction of an information processing
25 apparatus in accordance with an embodiment of the present invention;

FIG. 2 illustrates the construction of a

network system constructed using the information processing apparatus and multifunctional apparatuses according to the present invention;

FIG. 3 is a block diagram illustrating a software construction within the information processing apparatus shown in FIG. 1;

FIG. 4 is a block diagram illustrating a control construction of each multifunctional apparatus (MFP) shown in FIG. 2;

FIG. 5 is a plain view showing an example of an operation panel of the MFP shown in FIG. 2;

FIG. 6 shows an example of an operation screen displayed on a touch panel shown in FIG. 5;

FIG. 7 shows another example of the operation screen displayed on the touch panel shown in FIG. 5;

FIG. 8 shows an example of a user table reserved in an internal memory of the MFP shown in FIG. 2;

FIG. 9 shows a still another example of the operation screen displayed on the touch panel shown in FIG. 5;

FIG. 10 is a flowchart showing an example of a data processing procedure at the MFP according to the present invention;

FIG. 11 shows an example of address information managed at the information processing

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apparatus according to the present invention;

FIG. 12 shows an example of address information managed at the MFP according to the present invention;

5 FIG. 13 illustrates a state where control program installation processing is performed at the information processing apparatus according to the present invention;

FIG. 14 illustrates a memory map of a floppy
10 disk (FD) shown in FIG. 13;

FIG. 15 shows an example of a memory map of a main storage area in the information processing apparatus according to the present invention;

FIG. 16 shows an example of a user table
15 according to a modification of the present invention;

FIG. 17 shows an example of an operation screen displayed on the touch panel according to another modification of the present invention; and

20 FIG. 18 illustrates a memory map of a recording medium in which there are stored various data processing programs that are readable in a system constructed using the information processing apparatus and the MFP according to the
25 present invention.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will be described in detail below with reference to the drawings.

5 FIG. 1 is a block diagram illustrating the system construction of an information processing apparatus in accordance with the embodiment of the invention.

10 In FIG. 1, reference numeral 101 denotes a CPU. The CPU 101 executes a program stored in a RAM 102 or the like, loads into the RAM 102 a program or data that is stored in a hard disk 112 or a floppy disk (FD) 1302 shown in FIG. 13 that is inserted into a floppy disk drive 110, and
15 inversely stores the contents of the RAM 102 on the FD 1302 or the hard disk 112.

20 Reference numeral 103 denotes a video controller that throws an image of processing information and the like onto a connected monitor 104. Numeral 106 represents input devices, such as a keyboard and a mouse. Inputs from these input devices are processed by a program running on the CPU 101 through a controller 105. Numeral 114 indicates a multifunctional apparatus (MFP)
25 having a plurality of functions (multi-functions) of a scanner, a printer, a facsimile, and the like. The multifunctional apparatus 114 is connected to

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a parallel port controller 113. It is also possible to directly connect the multifunctional apparatus 114 to a network in the same manner as an MPF 201 shown in FIG. 2. The CPU, the RAM, and
5 each controller are connected to an internal bus 115 and perform exchange of control information and data.

Reference numeral 107 denotes a network controller that controls communications with
10 network devices connected via a hub 108. Numeral 109 represents a floppy disk drive controller that controls access to a floppy disk set in the floppy disk drive 110. Numeral 111 indicates a hard disk controller that controls access to the hard disk
15 112.

FIG. 2 illustrates the construction of a network including the information processing apparatus and multifunctional apparatuses according to the present invention. This drawing
20 corresponds to an example in which a system is constructed by connecting multifunctional apparatuses (MFP) of a multifunction type to the information processing apparatus 116 via a predetermined network 204.

25 In FIG. 2, each of reference numerals 201 and 203 denotes a multifunctional apparatus (MFP) that is constructed so as to be capable of performing

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facsimile transmission/reception processing via a public line that is not shown in the drawing.

Numeral 202 represents an information processing apparatus. Here, it is assumed that the

5 information processing apparatus is assigned a network address "172. 20. 1. 12" and the MFP 203 is given a network address "172. 20. 1. 1".

FIG. 3 is a block diagram illustrating the software construction within the information
10 processing apparatus 202 shown in FIG. 2.

In FIG. 3, reference numeral 301 denotes a network driver that controls the network controller 107 shown in FIG. 1 and, for instance, performs inputs and outputs of data via the
15 network 204 shown in FIG. 2.

Reference numeral 302 denotes a WWW server that recognizes an HTTP packet passed from the network driver 301 and outputs specified data. An address information conversion program 303 is
20 activated by the WWW server 302 and operates an address book management program 304, thereby converting (translating) addresses registered in an address book (address list) 305 placed on the hard disk 112 shown in FIG. 1 or the like into
25 address information that is processible in the MFPs 201 and 203 shown in FIG. 2 or the like.

Reference numeral 306 represents a FAX driver

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that converts specified images and document
information into a format that is suitable for FAX
transmission according to a facsimile transmission
request from an application program 307 and
5 outputs the converted images and document
information to a parallel port driver 308 or the
network driver 301. The FAX driver 306 also
registers an address in the address book 305 and
obtains an address registered therein by operating
10 the address book management program 304. The
parallel port driver 308 controls the parallel
port controller 113 shown in FIG. 1, thereby
transmitting data outputted from the FAX driver
306 to the multifunctional apparatuses connected
15 to a parallel port.

FIG. 4 is a block diagram illustrating the
control construction of the multifunctional
apparatuses (MFPs) 201 and 203 shown in FIG. 2.

In FIG. 4, reference numeral 401 denotes an
20 input control unit that obtains control
information and data received via a communication
medium such as a network. A control data analysis
unit 402 analyzes the control information and data,
and outputs a predetermined instruction to a
25 system control unit 403. The system control unit
403 receives instructions from the control data
analysis unit 402, a user interface control unit

404, an address book control unit 405, an access control unit 410, a print control unit 406, a scanner control unit 407, and a FAX control unit 408. The system control unit 403 also outputs
5 predetermined instructions to respective units.

If an instruction that specifies copy processing is outputted from the user interface control unit 404, for instance, the system control unit 403 instructs the scanner control unit 407 to
10 perform a scan operation, holds in a drawing memory 409 image data obtained by the scanning of a source document by a document reading unit (not shown), and instructs the print control unit 406 to print this data. In this manner, the copy
15 processing is performed.

Also, image data read by the scanner control unit 407 or facsimile image data received by the FAX control unit 408 is transmitted together with destination information and the like from an
20 output control unit 412 to another apparatus by utilizing a predetermined network or the like.

FIG. 5 is a plan view showing an example of an operation panel of the multifunctional apparatuses (MFPs) 201 and 203 shown in FIG. 2.
25 This drawing shows an example in which a facsimile button 602 is pushed and a display operation is performed in a facsimile mode.

In FIG. 5, reference numeral 601 denotes a copy button, numeral 602 a facsimile button, numeral 603 an extension button. The operation mode of each multifunctional apparatus is switched by the pushing of each button and the contents displayed on a touch panel 606 are changed accordingly. The touch panel 606 displays a device state and input items corresponding to each operation mode. In addition, it is possible for a user to change settings and perform input operations by directly touching the panel.

Reference numeral 604 represents a numeral input key (ten key) that is used to set the number of copies to be made in a copy mode or to specify a destination (facsimile number) in the facsimile mode. Numeral 605 indicates a start button. By pushing this button, copying or facsimile transmission is started under settings that are currently displayed on the touch panel 606.

Reference numeral 607 denotes a destination display area in which a facsimile number inputted using the input key 604 is displayed. When a register key 608 is touched, this facsimile number is registered as a destination. If a list key 610 is touched, a list of facsimile numbers registered as destinations is displayed on the touch panel 606. If a resolution key 611 or an image quality

key 612 is touched, a screen through which transmission resolution or transmission image quality is to be set is displayed on the touch panel 606. Numeral 613 represents an option key.

5 When the option key 613 is touched, an operation screen, such as a screen shown in FIG. 7 (to be described later) through which address information is to be inputted, is displayed on the touch panel 606.

10 FIG. 6 shows an example of the operation screen displayed on the touch panel 606 shown in FIG. 5. This example concerns a case where an address list is displayed on the touch panel 606 when the user touches an address key 609 shown in
15 FIG. 5.

In FIG. 6, reference numeral 801 indicates an address display area. If the user touches an external address key 804, a list of address information obtained in advance from other
20 information processing apparatuses or MFPs is displayed in this address display area 801. If the user touches a device address key 807, a list of device addresses registered in the MFP is displayed in the address display area 801.

25 Numerals 802 and 803 represent scroll keys that are respectively used to scroll up and down the display contents of the address list. Numeral

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805 denotes a register key that is used to register an address highlighted in reverse video as a transmission destination. Note that if the user touches a return key 806, the panel display
5 is switched to the display state of the touch panel 606 shown in FIG. 5.

FIG. 7 shows another example of the operation screen displayed on the touch panel 606 shown in FIG. 5. This drawing concerns a case where the
10 user touches the option key 613 shown in FIG. 5 and the display on the touch panel 606 is switched to a screen through which an address information URL is to be set.

In FIG. 7, reference numeral 901 denotes an
15 input area in which the user who is currently performing processing sets an address information URL. When the user pushes a touch panel keyboard 902 or the input key 604 shown in FIG. 5, characters, numbers, and symbols corresponding to
20 the pushed keys are inputted. If the user touches a set key 903 after this operation, the character string inputted into the input area 901 is, for instance, stored in a user table shown in FIG. 8 (reserved in a system storage area 411 within the
25 MFP shown in FIG. 4).

It should be noted here that in this embodiment, an administrator of the

multifunctional apparatus preregisters a user name and password for each user of the MFP.

FIG. 8 shows an example of the user table reserved in the system storage area of the MFPs 201 and 203 shown in FIG. 2. This user table is composed of user names, passwords, and address information URLs.

FIG. 9 shows a still another example of the operation screen displayed on the touch panel 606 shown in FIG. 5. This example corresponds to a screen that requests the user of the MFP to input his/her user name and password.

In FIG. 9, if the multifunctional apparatus (MFP) is activated, the screen shown in FIG. 9 that requests the input of a user name and password which are necessary to use the MFP is displayed on the touch panel 606 shown in FIG. 5. The user of the MFP inputs his/her user name and password using the input key 604 shown in FIG. 5.

The present embodiment will be described below by taking, as an example, a case where the MFP 201 shown in FIG. 2 obtains address information from the information processing apparatus 202. The following description will be made with reference to the flowchart shown in FIG. 10.

FIG. 10 is a flowchart showing an example of

a data processing procedure at the MFP according to the present invention. This example corresponds to a procedure of address information obtaining processing at the MFPs 201 and 203 shown in FIG. 2. Note that each of S501 to S507 indicates one of steps in the flowchart shown in FIG. 10.

For instance, if the MFP 201 is activated, the screen shown in FIG. 9 requesting the input of a user name and password that are necessary to use the MFP is displayed on the touch panel 606 shown in FIG. 5.

Here, the user of the MFP inputs his/her user name and password using the input key 604 shown in FIG. 5.

First, in step S501, it is judged whether an execute button 703 shown in FIG. 9 is pushed. Here, the MFP is continuously placed in a state for waiting for an input until the execute button 703 is pushed. Following this, if the execute button 703 is pushed, the processing proceeds to step S502 in which it is judged whether character strings inputted as a user name 701 and a password 702 on the touch panel 606 shown in FIG. 9 match respective character strings preregistered by the administrator of the MFP in the user table shown in FIG. 8 (it is judged whether the result of

authentication is OK). If the judgement result is negative, the processing returns to steps S501 to repeat the operation for waiting for an input using the execute button 703.

5 On the other hand, if the access control unit 410 has judged in step S502 that the user name and password match those registered in the user table, the processing proceeds to step S503 in which the system control unit 403 judges whether data is set
10 in an address information URL item corresponding to the inputted user name.

 If the access control unit 410 has judged that the address information URL entry is blank like, for instance, an address information URL
15 item 1002 shown in FIG. 8, the processing proceeds to step S507 in which an external address key display flag is set as "OFF". Then, the processing is ended.

 On the other hand, if the access control unit
20 410 has judged in step S503 that there is set an address information URL, the processing proceeds to step S504 in which a connection to an apparatus specified by the host part of the URL item is established via a predetermined network. Then,
25 address information is obtained.

 For instance, in the case of address information 1001 shown in FIG. 8 that is used in

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the system construction shown in FIG. 2, "172. 20. 1. 12" corresponds to the host part. That is, communication with "172. 20. 1. 12" (the information processing apparatus 202 shown in FIG. 2) is performed using the HTTP protocol specified by a protocol part, and access to an addr. html file specified by a file part is performed.

During this processing, in the information processing apparatus 202 shown in FIG. 2, the WWW server 302 that has received an access request specifying the addr. html file activates the address information conversion program 303 and converts address information shown in FIG. 11 that is stored in the address book 305 into an XML format shown in FIG. 12. Each "NAME" item of the address information shown in FIG. 11 is converted into a part surrounded by tags <name> and </name> in an XML file shown in FIG. 12. Also, each "FAX NUMBER" item is converted into a part surrounded by tags <fax> and </fax> and each "E-MAIL ADDRESS" item is converted into a part surrounded by tags <e-mail> and </e-mail>. This address information converted into the XML format is transmitted to the MFP 201. In this manner, the MFP 201 obtains the address information possessed by the information processing apparatus 202. Note that the address information shown in FIG. 11 is

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expressed as a table for ease of explanation,
although the actual address information may be
data stored in a database or data stored in a file
in binary form. That is, it does not matter which
5 storage format is used.

Then, in step S505, the system control unit
403 judges whether address information specified
by the address information URL item is obtained
and, if it is judged that the address information
10 is not obtained, the processing proceeds to step
S507 in which the external address key display
flag stored in the system storage area 411 is set
as "OFF". If it is judged that the address
information is obtained, the processing proceeds
15 to step S506 in which the external address key
display flag is set as "ON". Then, the processing
is ended.

After the processing shown in the flowchart
in FIG. 10 is completed in this manner, the touch
20 panel is switched to the display state of the
touch panel 606 shown in FIG. 5.

Here, if the address key 609 is touched,
address information is displayed on the touch
panel, as shown in FIG. 6. The user selects a
25 facsimile transmission destination from the
displayed address information. If the foregoing
external address key display flag, whose setting

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is performed by the processing in step S506 or
S507 in FIG. 10, is set as ON, the external
address display key 804 shown in FIG. 6 is
displayed on the touch panel 606. At the same
5 time, the address information obtained in step
S505 in FIG. 10 is displayed in the address
display area 801. On the other hand, if the
external address key display flag is set as OFF,
the external address display key 804 shown in FIG.
10 6 is not displayed and address information stored
in a device address book that is separately
provided in the MFP is displayed in the address
display area 801 as in the case where the device
address key 807 is pushed.

15 It should be noted here that in the present
embodiment, there has been described an example in
which addresses are displayed and one of the
addresses is selected for facsimile transmission
at the MFP. However, needless to say, as
20 indicated by reference numeral 1501 in FIG. 11, if
an e-mail address is stored together with a
facsimile number in an address book specified by
address location information and it is possible
for the MFP to transmit an e-mail, the user is
25 able to select a transmission destination by
displaying e-mail addresses during e-mail
transmission processing.

As described above, with the present embodiment, address information stored in the information processing apparatus to which it is possible to connect via an arbitrary communication medium is obtained on the basis of an address information URL corresponding to user information inputted for authenticating a user when he/she uses the MFP. Then, the obtained address information is displayed on a display apparatus of the MFP. This allows the user to refer to and use address information of another device that he/she uses on a day-to-day basis or an information processing apparatus by operating an operation panel of the MFP. As a result, without performing special operations, it is possible for the user to refer to and use address information individually possessed by the user from an apparatus that is currently used. As a result, there is improved usability.

It should be noted here that in the present embodiment, an address information control program is recorded on a floppy disk set in the floppy disk drive 110. This will be described with reference to FIG. 13.

FIG. 13 illustrates a state where control program installation processing is performed at the information processing apparatus according to

the present invention. In this embodiment, it is possible to load the address information control program and related data recorded on the FD 1302 into the information processing apparatus through
5 the mediation of a floppy disk apparatus (FDD) 1301, as shown in FIG 13.

In FIG. 13, reference numeral 1301 denotes the FDD of the information processing apparatus and numeral 1302 represents the floppy disk in
10 which various control program execution files and program data files are stored.

FIG. 14 illustrates a memory map of the FD 1302 shown in FIG. 13. This drawing corresponds to a state where an address information control
15 program execution file 1202, an address information control program data file 1203, file location information 1204, and the like are stored according to volume information 1201.

FIG. 15 shows an example of a memory map of a
20 main storage area in the information processing apparatus according to the present invention. This drawing shows a memory map of the RAM 102 shown in FIG. 1.

In FIG. 15, reference numeral 1101 denotes an
25 OS that is loaded from the hard disk 112, numeral 1102 various drivers such as a printer driver, numeral 1103 a work area, and numeral 1104 a data

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area.

The user inserts the FD 1302 into the FDD 1301. It is possible to perform an operation by reading the address information control program execution file 1202 and related data (address information control program data file 1203) into the RAM 102 under the control by the operating system (OS) 1101 and various drivers 1102 shown in FIG. 15 of the information processing apparatus.

Alternatively, the address information control program and the related data may be read from the FD 110, temporarily stored in the HD 112, and loaded into the RAM 102 when the program is used.

Also, the medium in which the address information control program and the related data are recorded is not limited to the FD. That is, any other recording medium, such as a CD-ROM or a memory card, may be instead used so long as it is possible for the information processing apparatus to read the recording medium.

Next, a modification of the aforementioned embodiment will be described below.

The embodiment described above relates to a construction where authentication is performed each time a user uses the MFP and there is obtained address information specified by an

address information URL related to inputted authentication information.

However, in general, address information is not updated on a day-to-day basis and the update frequency of the address information is relatively low, so that the above construction may be changed as follows. When the MFP obtains address information, the date on which the address information is obtained is recorded in association with authentication information and the address information is stored in a nonvolatile storage medium like the system storage area 411 shown in FIG. 4. At the next time when authentication processing is performed, an elapsed time is calculated from the difference between the date on which the next authentication processing is performed and the date recorded in association with the authentication information. Only if the elapsed time exceeds a predetermined time period, address information specified by an address information URL is obtained. At other times, address information stored in the nonvolatile storage medium is referred to.

In the case indicated by reference numeral 1601 in FIG. 16, there is obtained a construction described below. The update date (date on which address information was obtained) is "April 1,

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2001" and the update interval set for a user is
"10 days", so that if this user performs
authentication processing using an MFP after April
11, 2001, the system control unit 403 recognizes
5 that a time exceeding the update interval has
elapsed and obtains address information specified
by an address information URL. If authentication
processing is performed before April 11, 2001, the
address information stored in the system storage
10 area 411 is obtained.

It is possible to set, for each user, an
arbitrary value for the update interval between
the time when address information is obtained and
the next time when the address information is
15 obtained as in the address information URL. If a
value "0" is specified, address information
specified by an address information URL is
obtained each time authentication processing is
performed as in the aforementioned first
20 embodiment.

Also, if a user updates address information
at the information processing apparatus before a
time corresponding to the update interval has
elapsed, there is a possibility that it is
25 impossible to obtain the updated address
information until the time corresponding to the
update interval has elapsed. In view of this

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problem, an update key (not shown) is arranged on the touch panel 606. If this update key is pushed, address information specified by an address information URL is obtained without delay and is
5 displayed in the address display area 801. In this manner, there is further improved the usability.

With this modification, obtained address information is stored in a nonvolatile storage
10 medium and, if a time corresponding to an update interval set for each user has elapsed after the previous operation for obtaining address information or if the update key displayed on the touch panel is pushed, address information
15 specified by an address information URL is obtained. At other times, there is referred to address information stored in the nonvolatile storage medium. This makes it possible to reduce the load on a network and a source from which
20 address information is obtained.

Next, another modification will be described below.

In the aforementioned embodiment, there is obtained a construction where it is possible to
25 switch between the display of device addresses possessed by the MFP and the display of obtained external addresses using the device address key

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807 and the external address key 804. In this modification, however, as shown in FIG. 17, there is achieved a construction where it is possible to combine address information concerning device
5 addresses and address information concerning external addresses and to display the combined address information on a screen.

In FIG. 17, reference numeral 1701 denotes a list box used to specify the classification of
10 addresses to be displayed. When the list box 1701 is pushed, there are displayed three items "display all addresses", "display only device addresses", and "display only external addresses". When one of these items is selected (pushed), an
15 address list of the selected address classification is displayed in the address display area 801.

It should be noted here that there is a possibility that the same destination name
20 ("destination 1" in FIG. 17) is set for an external address and a device address. In this case, it is effective that addresses (FAX number and the like) corresponding to the destination name are successively displayed on a plurality of
25 lines from the viewpoint of improving usability. Also, if there exist a plurality of addresses (FAX number and the like) that are the same and

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correspond to the same destination name, it is more suitable that control is performed so that the plurality of addresses are not displayed but only one of the addresses is displayed.

5 With the present modification, two
classifications of address information are
combined with each other and the combined address
information is displayed. As a result, in the
case where simultaneous transmissive communication
10 is performed for an address that is registered
only as a device address and an address that is
registered only as an external address, it is
possible to register destinations by performing a
simple operation. In this manner, there is
15 improved operability.

The embodiment and each modification have been described above. In these embodiment and modifications, there has been described a case where an MFP obtains address information within an information processing apparatus. However, as indicated by reference numeral 203 in FIG. 2, there is obtained an effect that it is possible to use, at an apparatus, address information of another apparatus connected to a network even with a construction where address information is obtained from a multifunctional apparatus that is capable of recognizing an HTTP protocol and

outputting address information. Also, the WWW
server 302 in FIG. 3 may be replaced with a
program, such as an FTP server program, that uses
a protocol with which it is possible to perform
5 other data transfer.

It should be noted here that a construction
where the embodiment and each modification
described above are combined as appropriate is
included in the scope of application of the
10 present invention.

With the embodiment and each modification
described above, authentication information
inputted to use a multifunctional apparatus is
registered in association with an address
15 information URL specifying address information of
another apparatus that is used on a day-to-day
basis. When the address information is referred
to from the multifunctional apparatus, the address
information specified by the address information
20 URL is obtained and displayed, so that it is
possible to freely construct a data processing
environment in which address information is
referred to and used between different apparatuses.
As a result, there is markedly improved
25 convenience for a user.

The following description concerns the
construction of a computer program that is

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readable in a system constructed using the
information processing apparatus and the
multifunctional apparatus according to the present
invention. The following description will be made
5 with reference to the memory map shown in FIG. 18.

FIG. 18 illustrates the memory map of a
recording medium in which there are stored various
data processing programs that are readable in the
system constructed using the information
10 processing apparatus and the multifunctional
apparatus according to the present invention.

It should be noted here that although not
specifically shown in the drawing, there may be a
case where there are also stored information, such
15 as version information and creator information,
for managing a group of programs stored in a
storage medium and information, such as icons for
distinguishably displaying the programs, that
depends on an OS and the like on the side where
20 the programs are read.

Further, data belonging to various programs
are also managed in the directory described above.
Also, there may be a case where there are also
stored a program for installing various programs
25 into a computer, a program for decompressing a
compressed program that should be installed into a
computer, and the like.

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The function shown in FIG. 10 of the
aforementioned embodiment may be performed by a
host computer that executes a program installed
from the outside. Also, in this case, the present
5 invention is applicable to a case where a group of
information including programs is supplied to an
output apparatus from a storage medium, such as a
CD-ROM, a flash memory, or an FD, or from an
external storage medium via a network.

10 Needless to say, it is possible to achieve
the objects of the present invention by supplying,
to a system or an apparatus, a storage medium in
which there is recorded program code of software
for realizing the functions described in the
15 aforementioned embodiment and by having a computer
(or a CPU or an MPU) of the system or the
apparatus read the program code stored in the
storage medium and execute the read program code.

In this case, the program code itself read
20 from the recording medium realizes the novel
functions of the present invention. This means
that a storage medium in which the program code is
stored constructs the present invention.

As the recording medium for supplying the
25 program code, there may be, for instance, used a
floppy disk, a hard disk, an optical disk, a
magneto-optical disk, a CD-ROM, a CD-R, a magnetic

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tape, a nonvolatile memory card, a ROM, an EEPROM, and the like.

Also, needless to say, in addition to the case where the functions described in the
5 aforementioned embodiment are realized by a computer executing the read program code, the present invention includes a case where an OS (operating system) or the like running on a computer performs all or a part of actual
10 processing according to the contents of the program code and the functions described in the aforementioned embodiment are realized by the processing.

Further, needless to say, the present
15 invention includes a case where the program code read from the storage medium is written into a memory provided on a feature expansion board inserted into a computer or a memory provided in a feature expansion unit connected to a computer, a
20 CPU or the like provided on the feature expansion board or in the feature expansion unit performs all or a part of actual processing according to the contents of the program code, and the functions described in the aforementioned
25 embodiment are realized by the processing.

As many apparently widely different embodiments of the present invention can be made

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without departing from the spirit and scope thereof, it is to be understood that the invention is not limited to the specific embodiments thereof except as defined in the appended claims.

5 As described above, with the present invention, it becomes possible to freely construct a data processing environment having superior convenience in which a multifunctional apparatus and an information processing apparatus are
10 included and communication information managed by an external apparatus connected via a predetermined communication medium is obtained and is used.

Also, there is achieved an effect of making
15 it possible to freely construct a data processing environment having superior convenience in which if an external apparatus receives a request for communication information from a multifunctional apparatus, the communication information is
20 converted into communication information that is usable at the multifunctional apparatus and the converted communication information is transferred to the multifunctional apparatus that has requested the information, thereby making it
25 possible for the multifunctional apparatus to use the communication information even if the communication information is managed by the

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external apparatus in a unique data format.

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